

A new tribe Platycarphaeae and a new genus *Platycarphella* in the Cichorioideae (Compositae or Asteraceae)

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Abstract

A new tribe Platycarphaeae with three species is described in the Cichorioideae and two of the species are placed in a new genus *Platycarphella*.

Introduction

The Platycarphaeae of Namibia and South Africa is validated as a distinct tribe and is found to contain two genera, *Platycarpha* LESS. and a new genus *Platycarphella* V.A. FUNK & H. ROB. The tribe has a total of three species. These two genera form a monophyletic group that is unique in that its members are acaulescent perennial herbs with complicated secondary head structures, leaves that are elongate and prostrate, and stolons that emanate from the crown at the base of the secondary head. This unusual morphology combined with the results of the molecular analysis support the recognition of Platycarphaeae as a monophyletic group within the subfamily Cichorioideae. According to phylogenies based on molecular data, Platycarphaeae is on a long branch and it is associated with the base of the Vernoniae-Liabeae clade but this placement is not strongly supported. Platycarphaeae is hypothesized to be an old radiation because of the many molecular and morphological differences between this lineage and other members of the subfamily.

Each of the three species of the new tribe Platycarphaeae is easily identifiable. Within the tribe, the monotypic *Platycarpha* and the new genus *Platycarphella* with two species, form a sister group. The two genera are morphologically very distinct in styles, pollen, habit, and leaves. Photographs of all three species are available in FUNK et al. (in press).

Taxonomy

Platycarphaeae V. A. FUNK & H. ROB., tribus nov.

TYPE: *Platycarpha glomerata* (THUNB.) LESS.

Plantae perennes herbaceae acaulescentes rosettiformes in rhizomatis proliferatae, non laticiferae. Folia pinnate venosa, integra vel pinnate lobata, subtus albotomentosa margine interdum spinosa. Capitula sessilia in capitulis secundariis condensata, bracteis involucri 7–40 in seriebus 3–5 inaequalibus. Flores 3–60 in capitulo bisexuales; corollae purpureae vel roseatae, lobis elongatis, cellulis lorum elongatis laevibus; thecae antherarum base calcaratae non fimbriate vel breviter fimbriate caudatae, in cellulis endothelialibus elongatis apice uninoduliferae, appendices apicales oblongo-ovatae; basi stylosum angusti non noduliferi, scapi stylosum distaliter dense spiculiferi, partibus scapi spiculiferi rami multo brevioribus vel multo longioribus; rami stylosum elongati vel breviores et oblongi vel lineari-lanceolati, in superficiis interioribus omnino stigmatiferi. Achenia 3 aut 5 angulata cylindrica et laevia vel turbinata et inferne rugosa non phytomelaninifera; squamae pappi persistentes albae apice acuminatae non contiguae vel lateraliter imbricatae. Grana pollinis ca. 25 μ m in diametro excavata simpliciter tricolporata et echinata vel prenanthiformia.

Perennial herbs, prostrate, acaulescent, rhizomatous, forming mats and dense colonies or the individuals can be separate from one another; no milky sap. *Leaves* prostrate, radiating from a central crown, in 2–6 rings with oldest leaves in the lowermost ring and larger; blades oblanceolate, lanceolate, elliptic, or linear, varying in length (1–35 \times 0.5–11.0 cm), margins entire, dentate, or pinnatisect, adaxially green and mostly glabrous, with or without spines; abaxially with dense, white tomentum. *Inflorescence* sessile, 1–many headed, grouped in a secondary head on the crown, secondary receptacle 2–10 cm in diameter. *Heads* subglobose to cylindrical, discoid, 3–25 mm in diameter. *Involucral bracts* (phyllaries) 7–40 in 3–5 series, lanceolate to linear, usually glabrous (some collections of *P. carlinoides* with tufts of tomentum at apices), outer bracts 6–20 \times 1–5 mm, inner bracts becoming smaller and more slender with innermost bracts resembling paleae; margins entire, apices acuminate. *Florets* 3–60, bisexual; corollas purple, mauve, lilac, or pink, occasionally white, varying in size from 8 to 23 mm long, lobes 3.0–3.5 mm long with glands on abaxial surface of apex of each lobe; tubes sparsely hispid at distal end; anthers purple, 4–13 mm, bases of thecae spurred, without or with short fimbriate tails; apical appendages oblong-ovate; styles lavender, 9–29 mm long, in *Platycarpha* the branches longer, terete, hairy nearly to tip, in *Platycarphella* the branches shorter, slightly tapered with hairs scarcely developed distally. *Achenes* 3 or 5 sided, turbinate and wrinkled proximally or long-cylindrical and smooth, glabrous or sparsely hairy basally, dark but without

phytomelanin. *Pappus* of 7–12 persistent white scales 2–6 mm long, apex acuminate, longer and not contiguous in *Platycarpha*, truncated and overlapping in *Platycarphella*.

Traditionally the genus *Platycarpha* has contained three species. In the process of preparing a book chapter (FUNK et al., in press) and a monograph (FUNK & KOEKEMOER, in prep.) two of the species were found to be distinct from the type species. Therefore we here describe a new genus *Platycarphella* to accommodate the two species.

Key to the genera of the Platycarphaeae

1a. Inflorescence with large compact head or group of heads with (20–) 60–100 florets; corollas 20–23 mm long; style branches 3.0–3.5 mm long, much longer than pubescent upper shaft of style; pollen with bow-tie shaped rims around colpi, with bridge at middle over pore; pappus segments acuminate without overlapping margins *Platycarpha*

1b. Inflorescence with heads smaller, with 3–14 florets; corollas 8–13 mm long; style branches ca. 1 mm long, shorter than pubescent upper part of style shaft; pollen echinate tricolporate, colpi narrowly lenticular without elaborated bow-tie shaped margins or bridge over pore; pappus segments truncate and with overlapping margins *Platycarphella*

The two genera are as follows.

***Platycarpha* LESS.**, *Linnaea* 6: 688. 1831.

Monotypic: *P. glomerata* (THUNB.) LESS.

South-eastern and eastern South Africa.

Vegetative plants are distinct from *Platycarphella* by their larger size and the deeply pinnatisect leaves with spine-tipped lobes.

***Platycarphella* V.A. FUNK & H. ROB., genus nov.**

TYPE: *Platycarpha carlinoides* OLIV. & HIERN

In habitis rosetiformibus acaulescentibus et in inflorescentibus sessilibus *Platycarpham* similis sed in floribus 3–14 versus (20–) 60–100 in capitulo et in corollis 8–13 versus ca. 23 mm longis et in ramis stylosum ca. 1 versus ca. 3 mm longis et in colpis pollini non ornate marginatis distincta.

Perennial, rosetiform, acaulescent plants with sessile inflorescences, proliferating by rhizomes; without latex. Leaves prostrate in rosettes, radiating from a woolly

root crown, leaves oblanceolate, 8–60 mm long, margins entire, somewhat undulating or minutely dentate, rarely pinnatisect. Inflorescences of secondary heads; heads with 3–14 florets; corollas 8–13 mm long; style branches ca. 1 mm long, shorter than the papillose part of the upper shaft of the style; branches slightly tapered, papillae or hairs becoming obsolete toward tips. Pappus of truncated and overlapping white scales. Pollen grains echinate, tricolporate, without elaborated border on colpi and without bridge across pore, non-caveate. – Species 2.

***Platycarphella carlinoides* (OLIV. & HIERN) V.A. FUNK & H. ROB., comb. nov.**

Platycarpha carlinoides OLIV. & HIERN, Fl. Trop. Afr. 3: 430, 1877.

Namibia and South Africa.

***Platycarphella parvifolia* (S. MOORE) V.A. FUNK & H. ROB., comb. nov.**

Platycarpha parvifolia S. MOORE, J. Bot. 41: 136, 1903.

South Africa.

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References

- FUNK, V.A., ROBINSON, H. & M. KOEKEMOER 2009. Platycarphaeae. In: FUNK, V. A., SUSANNA, A., STUESSY, T. & R. BAYER (eds.), *Systematics, Evolution & Biogeography of the Compositae*. IAPT, Vienna. [In press]